

Claims

We claim:

1. An apparatus for supporting a thin, planar workpiece comprising;
a plenum in fluid communication with a gas supply and comprising a workpiece support flange having an inner diameter slightly smaller than an outer diameter of the workpiece; and
wherein when a workpiece is placed on the support flange and gas is supplied to the plenum the inner diameter of the support flange coacts with the workpiece edge to define a gas flow path through which the supplied gas flows when the workpiece is lifted from the support flange.
2. The apparatus of claim 1 comprising an edge ring that rests on the support flange and contacts an outer edge of the workpiece and wherein the edge ring has an inner diameter slightly smaller than the outer diameter of the workpiece and an outer diameter slightly larger than an outer diameter of the workpiece and wherein when the workpiece is placed on the support flange and gas is supplied to the plenum the inner diameter of the support flange and the outer diameter of the support ring form a gas flow path through which the supplied gas flows when the edge ring and the workpiece are lifted from the support flange.
3. The apparatus of claim 1 comprising locating structure disposed about a periphery of the plenum for locating the workpiece on the support flange.

4. The apparatus of claim 3 wherein the locating structure comprises a locating wall disposed in proximity to the support flange that maintains the workpiece location with respect to the support flange.

5. The apparatus of claim 1 comprising workpiece loading structure that lifts the workpiece above the support flange when the workpiece support is moved to a loading position.

6. The apparatus of claim 5 wherein the workpiece loading structure comprises a plurality of pins that protrude through a bottom surface of the plenum such that when the plenum is moved into close proximity to a process chamber surface the pins contact the surface such that as the workpiece support moves toward the surface the pins contact and lift the workpiece away from the support flange.

7. The apparatus of claim 6 wherein the pins comprise a seal at a first distal end that rests on the bottom surface of the plenum when the pins are not in contact with the process chamber surface.

8. An apparatus for supporting a thin, planar workpiece comprising;
a plenum in fluid communication with a gas supply and comprising a workpiece support flange having an inner diameter slightly smaller than an outer diameter of the workpiece;
locating structure disposed about a periphery of the support flange that maintains the workpiece location with respect to the support flange;
a wafer edge ring that rests on the workpiece support flange comprising an inner diameter slightly smaller than an outer diameter of the workpiece and an outer diameter slightly larger than the outer diameter of the workpiece; and
wherein when a workpiece is placed on the edge ring and gas is supplied to the plenum the inner diameter of the support flange coacts with the edge ring to define a gas flow path through which the supplied gas flows when the workpiece is lifted from the support flange.

9. The apparatus of claim 8 comprising workpiece loading structure that lifts the workpiece above the support flange when the workpiece support is moved to a loading position.

10. The apparatus of claim 8 wherein the workpiece loading structure comprises a plurality of pins that protrude through a bottom surface of the plenum such that when the plenum is moved into close proximity to a process chamber surface the pins contact the surface such that as the workpiece support moves toward the surface the pins contact and lift the workpiece away from the support flange and wherein the pins

comprise a seal at a first distal end that rests on the bottom surface of the plenum when the pins are not in contact with the process chamber surface.

11. A method for supporting a thin, planar workpiece comprising the steps of:
placing the workpiece on a plenum comprising a support flange having an inner diameter slightly smaller than an outer diameter of the workpiece;
introducing a flow of gas to the plenum to pressurize the plenum until the workpiece is lifted and the gas flows through a path defined by the workpiece and the inner diameter of the support flange; and
maintaining the flow of gas such that the workpiece is supported in a position above the support flange by the gas pressure in the plenum.

12. The method of claim 11 wherein the step of placing the workpiece on the support flange is performed by:
placing the workpiece on a load structure that supports the workpiece above the support flange when the plenum is in a load position; and
actuating the load structure to place the workpiece on the support flange by moving the plenum to a processing position.

13. The method of claim 11 comprising the step of providing an edge ring having an outer diameter slightly larger than the outer diameter of the workpiece and an inner diameter slightly smaller than an outer diameter of the workpiece such that when the gas is introduced to the plenum, the gas flows through a path defined by the edge ring and the inner diameter of the support flange.